WTP SAFETY REGULATION DIVISION (OSR) ACTIVITY REPORT

October through January 2003

February 20, 2003

WTP Safety Regulation Division (OSR)

U.S. Department of Energy
Office of River Protection
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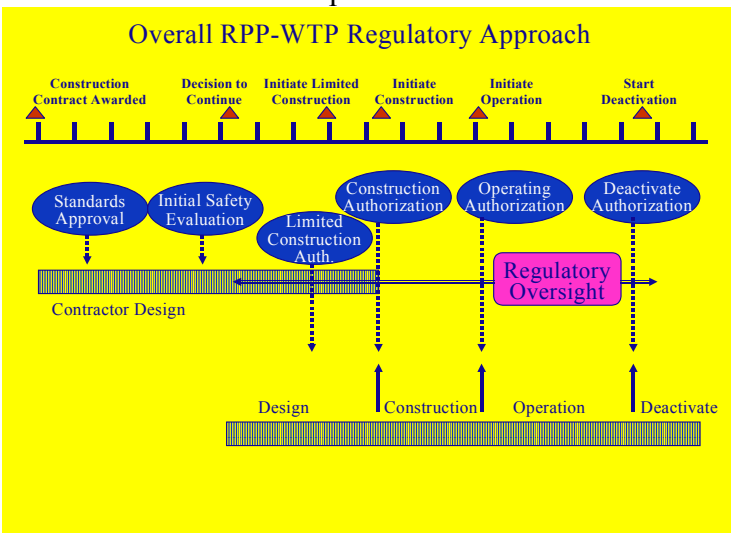
1.0 BACKGROUND

As directed by Congress in Section 3139 of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999, the U.S. Department of Energy (DOE) established the Office of River Protection (ORP) at the Hanford Site to manage the River Protection Project (RPP). ORP is responsible for the safe storage, retrieval, treatment, and disposal of the high level nuclear waste stored in the 177 underground tanks at Hanford.

The mission of the River Protection Project is to retrieve and treat Hanford's tank waste and close the tank farms to protect the Columbia River. This cleanup must occur in an environmentally sound, safe, and cost-effective manner. The role of the WTP Safety Regulation Division (OSR) is to regulate the radiological, nuclear, and process safety aspects of this effort.



DOE patterned its safety regulation of the RPP Waste Treatment and Immobilization Plant (WTP) Contractor to be consistent with the concepts and principles of good regulation (reliability, clarity, openness, efficiency, and independence) used by the U.S. Nuclear Regulatory Commission (NRC). In addition, the DOE principles of integrated safety management (ISM) were built into the regulatory program for design, construction, operation, and deactivation of the facility. The regulatory program for nuclear safety permits waste treatment services to occur on a timely, predictable, and stable basis, with attention to safety consistent with oversight that would occur from an external agency. DOE established the OSR as a dedicated regulatory organization to be a single point of DOE contact for nuclear safety oversight and approvals for the WTP Contractor. This organization performs nuclear safety review, approval, inspection, and verification activities for ORP using the NRC principles of good regulation while defining how the Contractor shall implement the principles of standards-based ISM.

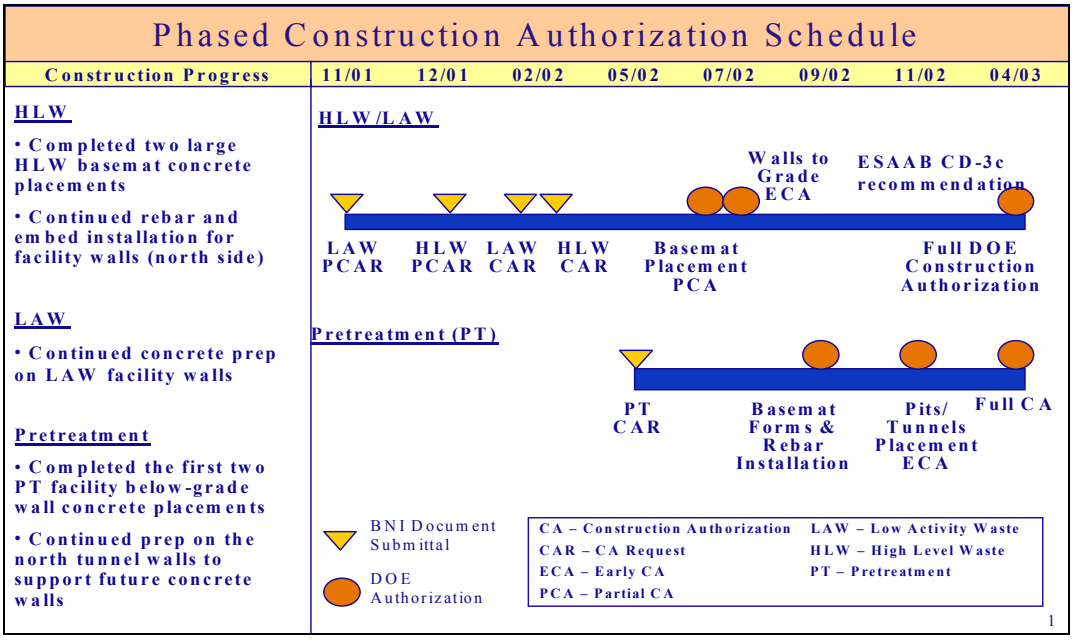
The OSR actively solicits questions, comments, or requests for further information and will try to meet the specific needs of interested groups and individuals. The OSR can be reached via the website feedback form, through e-mail at osrfeedback@rl.gov or by telephone at (509) 376-6727.

2.0 REGULATORY ACTIVITIES

Significant Milestone – In January 2003 BNI proceeded with limited construction activities for the WTP Pretreatment facility

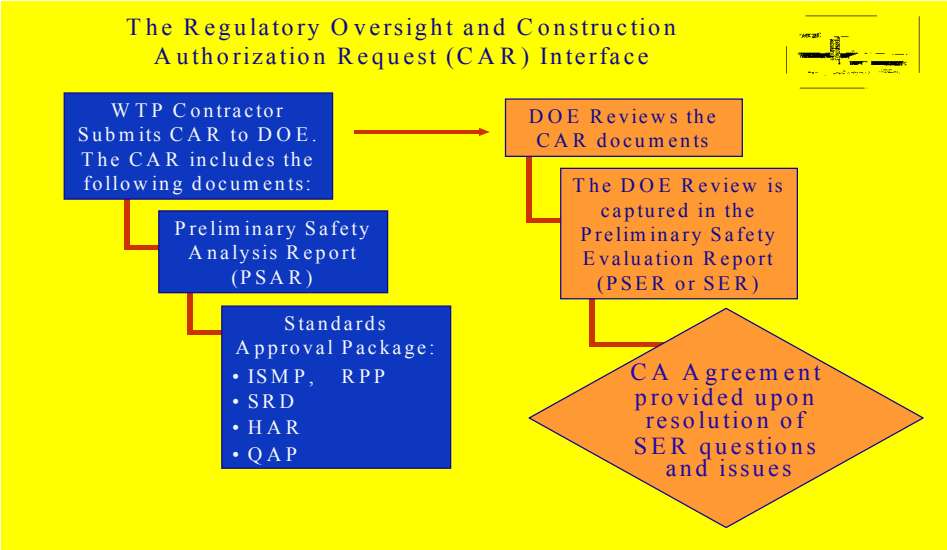
Significant progress continues on the WTP, Project W-530. The ORP issued both the Safety Evaluation Report (SER) Revision 2, and the Construction Authorization Agreement Revision 0, with conditions of acceptance, for full construction of both the High Level Waste (HLW) and the Low Activity Waste (LAW) facilities. The SER was drafted in January 2003 to support authorization of full construction for the Pretreatment (PT) Facility. The next WTP Critical Decision for full construction authorization (CD-3c) is scheduled to be reviewed by the Energy Systems Acquisition Advisory Board in April 2003.

The following figure shows the construction authorization schedule:



Left. HLW Rebar progress on north side of facility. Above: First LAW perimeter wall.

The OSR provides detailed construction authorization reviews and construction authorization recommendations to the ORP Manager. WTP construction does not begin until DOE provides Bechtel National, Inc. (BNI) specific authorization. The results of OSR reviews and inspections are critical to the authorization process. Issues, and their resolutions, are formally documented and placed in the public record to ensure that the process is fully visible.



2.1 SER and Construction Authorization Agreement (CAA) Issued for the WTP

In November 2002, the ORP issued both the SER, Revision 2, and the CAA, Revision 0, with conditions of acceptance, for full construction of both the HLW, and the LAW facilities. Additionally, the SER authorized the construction of PT pits, tunnels, and basemat, and construction of selected aspects of Balance of Facilities (BOF).

The SER contained a number of key conditions:

+ Resolution of engineering performance issues.
+ Correction of errors and inconsistencies in the Preliminary Safety Analysis Report.
+ Completion of selected hazard analyses not expected to result in design changes.
+ Revised and updated Safety Requirements Document (SRD), ISM Plan, and Quality Assurance Manual.

The SER and the CAA, Revision 0, for the WTP may be found at the following internet site:

http://www.hanford.gov/osr/documents/02-OSR-0518_SER_for_WTP_Transmittal_Letter.PDF

http://www.hanford.gov/osr/documents/02-OSR-0517_Notice_to_Proceed_with_CA.PDF

2.2 PT Facility Construction Authorization

In November, ORP closed all five WTP CAA conditions of acceptance that were required to be completed in order to start PT Facility pits, tunnels, and basemat construction. A closure letter was issued after review and acceptance of BNI documentation of additional structural design information. This documentation demonstrated that the PT Facility pits, tunnels, and basemat design has adequate strength to withstand seismic and other design basis events, and should provide adequate safety.

The Closure of PT Conditions of Acceptance correspondence may be found at the following internet site:

http://www.hanford.gov/osr/documents/02-OSR-0572_Condition_Closure_letter.PDF

The ORP staff worked closely with BNI to resolve and close 341 questions identified during the PT Preliminary Safety Analysis Report (PSAR) review. The ORP staff has drafted the SER for the PT Facility portion of the PSAR to support authorization of PT Facility full construction. The draft SER has been provided to the staff of the Defense Nuclear Facilities Safety Board (DNFSB). Two items remain to be completed before PT Facility full construction authorization is granted: (1) Complete the soil-structure interaction analysis and quantify available design margin, provide soil pressures for the fire water pit, evaluate the effect of disconnected nodes between the basemat and walls, and provide an explanation of unconventional modeling of floor nodes that appear to double count the floor mass; and (2) Complete the readiness inspection for full PT Facility construction, currently planned for the week of March 3, 2003.

2.3 BOF Construction Authorization

Revision 2 of the SER supporting WTP Construction Authorization incorporated construction of selected aspects of the BOF. These included the electrical utility distribution systems, switchgear building, important-to-safety (ITS) switchgear building, administration building, chiller/compressor plant, water treatment building and storage tanks, cooling tower facility, fire water pump house and fire water storage tanks, non-dangerous, non-radioactive liquid effluent facility, access control facility, simulator facility (located offsite), warehouse, steam plant, wet chemical storage facility, diesel generator facility (includes both standby and emergency diesel generators), fuel oil facility, and melter assembly building.

BNI plans to revise the PSAR to incorporate the Glass Former Storage Facility through a Contractor-approved Authorization Basis Change Notice (ABCN). After completion of the ABCN, the WTP CAA will be revised to add the Glass Former Storage Facility. ORP agreed with BNI's plan in a December 3, 2002, letter, which may be found at the following internet address:

http://www.hanford.gov/osr/documents/02-OSR-0574_BOF-3_authorization.PDF

2.4 Analytical Laboratory (PT PCAR)

On October 30, 2002, BNI requested ORP approval to submit a segmented Construction Authorization Request (CAR) for the Analytical Laboratory on February 24, 2003. At a subsequent December 10, 2002, meeting, BNI presented its proposed Analytical Laboratory Partial CAR (PCAR) content and schedule. In this proposed approach, the associated structural calculations would be submitted as Revision A calculations, with Revision 0 calculations provided prior to the end of the review. Additionally, a complete set of Design Basis Accidents and important-to-safety systems, structures and components, and draft Technical Safety Requirements would not be provided until the full facility CAR in May 2003. Due to the experience gained with the LAW, HLW, and PT segmented construction authorization submittals, the ORP was concerned that the review of preliminary and incomplete information regarding the Analytical Laboratory would result in an inefficient review without commensurate benefit to the project. Therefore, ORP did not approve the BNI proposal to segment the Analytical Laboratory Construction Authorization Submittal. ORP proposed an alternative to submittal of a PCAR, whereby BNI would submit a CAR for the full facility with a request for early approval of the two pits and tunnels, and the basemat for the facility. Under this arrangement, the CAR would be submitted, as currently scheduled, on May 2, 2003. The ORP would review and approve the two pits and the basemat at the earliest possible date. ORP's letter response to BNI's request to submit a PCAR for the Analytical Laboratory may be found at the following internet site:

http://www.hanford.gov/osr/documents/02-OSR-0630_Dispproved_Lab_Submittal.PDF

2.5 Fire Protection Issues

Representatives from ORP, Environmental Management (EM)-5 and BNI met and discussed fire protection and Uniform Building Code (UBC, 1997) compliance submittals currently being reviewed by ORP. These include the ABCN requesting approval for replacement of the non-structural requirements of the UBC, 1997 with the corresponding requirements from the International Building Code (IBC, 2000), justification for alternate approaches to satisfying some of the fire proofing and fire barriers requirements of UBC, 1997 for the WTP process buildings, justification for an alternate approach to satisfying the UBC, 1997 requirements for hazardous (H7) occupancies in the WTP process buildings, and an interpretation to the UBC, 1997 requirements for the fire protection of mezzanines. ORP is preparing correspondence that either requests BNI to submit additional information to support completion of the DOE review (UBC code compliance equivalency) or informs BNI of the approval or denial of their request (H7, mezzanine interpretation). ORP staff will meet with experts on the Building Codes (UBC and IBC) on February 20, 2003, to obtain the additional information needed to make the decision on the appropriate disposition for the IBC, 2000 ABCN. In addition, ORP will support a two-week review of WTP fire protection issues to be performed by the DOE fire protection engineer (G. Morton) from the Savannah River Site beginning the week of February 17, 2003. ORP will not respond to BNI on some of the fire protection submittals until this review has been completed.

In February, BNI will submit a revised request to not use automatic sprinklers in low combustible, high radiation WTP areas. BNI also will submit a revised request for the use of

fire-rated cable or cable installation in fire-related enclosures (versus in separate fire areas) if the design evolves sufficiently to support the need for exemption.

2.6 Inspection Programs

The purpose of the OSR Inspection Program is threefold: (1) confirm Contractor performance to the authorization basis for radiological, nuclear and process safety; (2) ensure timely resolution of corrective actions; and 3) develop independent inputs for subsequent regulatory authorizations.

The WTP Contractor is directly responsible for the safety of its activities. Additionally, it is the responsibility of OSR, for DOE, to ensure that the Contractor fully discharges its safety responsibility. Part of meeting this responsibility comes from direct inspection of the WTP facilities and Contractor systems.

2.6.1 On-Location Inspections

On-Location Inspections are performed on a continuous schedule every 6 weeks. During the last four months, three On-Location Inspections were performed and reports were submitted. Two of the reports can be accessed at the following links:

http://www.hanford.gov/osr/documents/IR-02-014_cover_letter.PDF

http://www.hanford.gov/osr/documents/A-03-OSR-RPPWTP-001_cover_ltr.PDF

The third report is in development and will be issued in February 2003.

In October, the OSR conducted an exit meeting with BNI covering the inspection of construction of the WTP for the period, August 24, 2002 through October 10, 2002. Inspection scope included the following: LAW structural backfill and compaction activities; material testing subcontractor activities; fire protection piping testing; installation of forms, reinforcement steel, and embedded steel; concrete placements; recovery activities associated with the LAW concrete cold joint; and industrial health and safety activities. With the exception of the Findings described below, construction performance was acceptable, meeting contract, authorization basis, and applicable code and standard requirements.

The following two Findings were identified:

+ Failure to adequately ensure temperature elements, used to monitor the temperature of the water associated with the concrete test specimen water storage tanks, were calibrated or configured in accordance with American Society for Testing and Material C 511, SRD requirements.

+ Failure to ensure drawings on controlled sticks at the site were the most current revisions.

In December, ORP presented to BNI the preliminary results from its inspection of construction activities during the period October 11 through December 4, 2002. Activities assessed included forms, rebar, and embedment installations; concrete placements; LAW cold joint preparations; erosion/corrosion mitigation activities; industrial health and safety performance; and observation of balance of plant (non important-to-safety) construction activities. No Findings of non-compliance were identified. Results were provided to BNI via letter dated January 13, 2003.

In January, ORP conducted an exit meeting with BNI to discuss the results of a multidisciplinary team inspection of WTP construction activities for the period December 5, 2002, through January 24, 2003. Inspection activities included assessing forms, rebar, and embedment installations, concrete placements, Low Activity Waste cold joint preparations and concrete placements, observations of an emergency preparedness exercise, industrial health and safety performance, and observation of balance of plant (non important-to-safety) construction activities. One Finding of non-compliance was identified:

+ Painting portions of some important-to-safety rebar prior to concrete placement in the Pretreatment north pit.

Also, a significant concern was discussed regarding ORP identifying numerous National Electric Code violations in the temporary construction and balance-of-plant areas. A detailed inspection report documenting these inspection results is planned for issuance February 21, 2003.

2.6.2 Construction Authorization (CA) Readiness Assessment Inspection

ORP performed two Readiness Assessment inspections during the time period September 30, 2003, through November 15, 2003.

In October, the OSR conducted a partial exit with BNI on the WTP CA Readiness Inspection, which was conducted from September 30 through October 10, 2002. The OSR evaluated BNI's Assessment of CA Readiness and BNI's readiness to support the next ITS construction activity (structural steel construction). The OSR found BNI had put in place the programs necessary to ensure structural steel construction activities would be ready when scheduled to begin. LAW structural steel construction activities were scheduled to begin in late November early December. The inspectors agreed with BNI's assessment of their readiness for CA with one exception. The readiness assessment performed by engineering did not adequately address the work performance issues documented in BNI's Corrective Action Program and substantiated in previous ORP inspections. ORP communicated this concern to BNI in an October 4, 2002, letter. ORP had identified twelve Findings of non-compliance with AB requirements during inspections of Configuration Management, Standards Identification, Standards Implementation, and Design Process. The Findings were of particular concern because they called into question the adequacy of the design being installed then and in the immediate future.

In November, ORP performed an inspection, over a two-week period, to assess BNI's readiness for LAW and HLW full construction authorization. This inspection concluded on November 7, 2002. Prior to the second week of inspection activity, ORP conducted an interim exit meeting to

inform BNI that a conclusion on readiness for construction authorization could not be reached until engineering work performance issues, previously identified, were adequately addressed. Subsequent to the exit meeting, BNI provided a detailed action plan that addressed these issues. ORP conducted the second week of inspection from November 4 through 7, 2002, to verify the adequacy of the compensatory measures established to mitigate the root causes of the identified engineering deficiencies. The second week of inspections concluded conditionally that BNI had adequately evaluated the concerns, proposed appropriate corrective actions, and was implementing actions in support of the full construction authorization for LAW and HLW facilities. This conclusion was communicated formally to BNI on November 13, 2002, in a letter that may be accessed at the following internet address:

http://www.hanford.gov/osr/documents/A-03-OSR-RPP-WTP-002_Letter.PDF

2.6.3 AB Management Program Inspection

During the week of January 6, 2003, ORP inspected the AB Management Program implemented by BNI for the WTP. The inspection focused on evaluating the effectiveness of the Contractor's compensatory actions implemented to correct numerous inconsistencies between the design media and the authorization basis that were reported to DOE in a letter dated November 14, 2002. On January 15, 2003, ORP exited the inspection with BNI. The inspectors determined that generally all the Contractor's commitments were completed, but not all were effective. On February 7, 2003, ORP issued the AB Management Assessment Inspection Report (A-03-OSR-RPPWTP-007). The inspection report identified several implementation issues that resulted in the following four Findings: (1) failure to ensure that information related to Authorization Basis Change Notices (ABCN) and Safety Evaluations were readily available for ORP review; (2) failure to perform Safety Evaluations when required; (3) failure to ensure Safety Evaluations were documented in sufficient detail such that a knowledgeable individual reviewing the safety evaluation could identify the technical issues considered during the Safety Evaluation and the basis for the determination; and (4) failure to ensure that ABCNs submitted to ORP include a summary of the Safety Evaluation. BNI has been informed that satisfactory responses to these Findings are prerequisite before issuance of the Authorization Agreement for PT full construction.

2.6.4 As Low As Reasonably Achievable (ALARA) Program Inspection

During the week of November 18, 2002, inspection of BNI's As Low As Reasonably Achievable program was conducted. The ALARA inspection identified one Finding concerning failure to fully implement decontamination and decommissioning authorization basis commitments related to embedment of the HLW Facility C-5 exhaust ducting/piping. The ALARA inspection report may be found at the following internet site:

http://www.hanford.gov/osr/documents/A-03-OSR-RPP-WTP-003_Letter.PDF

2.6.5 Corrective Action Inspection

During the week of November 18, 2002, inspection of BNI's corrective action program determined that BNI had made several improvements to their program and were effectively implementing requirements for auditor qualifications. Weaknesses were noted in performing management assessments in Engineering, in that they failed to identify non-compliances with requirements to keep the design and authorization basis consistent. The final inspection report for this area was released in January, and may be accessed at the following internet address:

http://www.hanford.gov/osr/documents/A-03-OSR-RPPWTP-004_cover_letter.PDF

2.6.6 Price-Anderson Amendments Act of 1988 (PAAA) Program Inspection

On December 9, 2002, ORP presented to BNI the preliminary results from its inspection of the WTP PAAA program conducted from November 25 through December 2, 2002. The inspectors concluded an adequate PAAA process had been established that met the contractual requirements established in the ISM Plan, Section 2.5. BNI adequately identified, reported, tracked and completed corrective actions for issues identified as PAAA non-compliances. Based on the limited number of Non-compliance Tracking System reports made to date, BNI was using an appropriate threshold for reporting PAAA non-compliances. Management and the PAAA organization are well versed on the PAAA process and possess the experience and background to make the correct decisions on quality issues and their applicability to PAAA enforcement. No Findings were identified in this inspection. A report documenting the results of this inspection was issued in mid-January 2003, and may be accessed at the following internet address:

http://www.hanford.gov/osr/documents/A-03-OSR-RPPWTP-004_cover_letter.PDF

2.6.7 LAW Facility Cold Joint Concrete Placement Inspection

On December 23, 2002, ORP conducted an inspection of BNI's preparations to resume placement of concrete in the north and south portions of the WTP LAW facility basemat cold joint. The cold joint occurred on July 11, 2002, when BNI halted the placement prematurely because the concrete supplier was unable to supply concrete at or below the required 70°F temperature. Ambient temperatures on July 11 exceeded 100°F. BNI completed an extensive effort to prepare the cold joint for this concrete placement, including preparing the existing concrete for the placement, obtaining concrete experts to evaluate the soundness of the existing concrete, qualifying and installing over 2500 number 5 dowels to restore shear basemat strength, and documenting an engineering evaluation of the acceptability of the cold joint for the placement. DOE reviewed and approved BNI's engineering evaluation. BNI completed the cold joint placement for the LAW basemat in mid-January. The LAW Basemat Cold Joint Engineering Report may be found at the following internet site:

http://www.hanford.gov/osr/documents/03-OSR-0005_Summary_of_Cold_Joint_Attach.pdf

2.6.8 Document Control and Records Management Inspection

On January 16, 2003, an inspection exit was conducted with BNI to discuss the results of the ORP review of BNI's Document Control and Records Management programs at the WTP Project. The inspectors concluded performance in these areas was acceptable. Some minor procedural issues were identified and storage of radiographs was not in accordance with requirements. BNI wrote a Corrective Action Report to address the radiograph issue and committed to address the procedural issues. One Finding was identified for failure to incorporate a Field Change Request (FCR) into a drawing when it had been revised. In addition, the FCR was not posted against the revised drawing even though the changes depicted by the FCR still applied. ORP anticipates issuance of a letter to BNI in mid-February documenting the results of this inspection.

2.7 Responses to DNFSB Letters

A response to the November 4, 2002, DNFSB letter to EM-1 was developed and transmitted to EM-1. The DNFSB letter concerned the possibility of systemic weaknesses in the ISM review process, based on a number of conditions that were not adequately addressed in the PSARs, and not captured during the ISM reviews. The ORP agreed with most of the observations, finding them consistent with the SERs that have been issued. Before transmitting to EM-1, a draft response was reviewed with the DNFSB staff on December 23, 2002, and was revised to address concerns regarding the detail of a few of the responses. ORP and BNI developed a revised response and discussed it with federal and DNFSB staff during the week of January 13, 2003, before transmitting the letter to EM-1, which may be accessed at the following internet address:

http://www.hanford.gov/osr/documents/03-OSR-0013_DNFSB_response_from_Roy_to_Roberso.PDF

A response to the December 16, 2002, DNFSB letter to the Secretary of Energy also is being developed. The letter concerned the lack of a formal strategy for maintaining design margins as a function of design uncertainties, and insufficient federal oversight of the project. In a teleconference call on January 10, 2003, the DNFSB staff provided additional insight into DNFSB concerns in this regard. A draft response to these concerns has been developed, and will be discussed with the DNFSB staff. Based on the results of this discussion, a final response will be issued.

2.8 Nonradiological Worker Safety and Health Plan Revision

On January 2, 2003, BNI submitted a revised Nonradiological Worker Safety and Health Plan to the ORP for approval. The plan is a Contract Deliverable per Contract Table C.5-1.1, item 7. Revisions were made to the plan to correct terminology following recent BNI organizational transition, to clarify lockout/tagout program implementation, and to clarify 29 CFR 1926 (Occupational Safety and Health Administration) implementation. ORP plans to issue questions to BNI by February 7, 2003. Completion of the review is expected by February 28, 2003, but it is dependent upon receipt of acceptable responses to the questions.

3.0 NEAR-TERM REGULATORY ACTIONS AND ACTIVITIES

Planned activities for the next 120 days include the following:

February 2003 - May 2003 - WTP Safety Regulation Division

- Conduct the following inspections of WTP activities:
  - Pretreatment Full Construction Authorization Readiness
  - Continuous On-Location
  - Washington Administrative Code Compliance
  - Configuration Management
  - Document Control
  - Quality Control Program, Procurement and Receipt
  - Quality Assurance assessment
  - Standards Selection

- Continue review and approval of ABCNs, Decisions to Deviate (DTDs), and Authorization Basis Amendment Requests

- Change AB Rules (Potential Revision to RL/REG-97-13, Rev.9)

- Review Revised SRD

- Review Revised ISM Plan

- Civil Load Analyses

- Inspection Procedures Update

- Review and Update OSR Directives

- Office of Enforcement PAAA Program Review

- Issue SER for Full Construction Authorization of PT

- Issue Analytical Laboratory Review Handbook

- FY 2004 and FY 2005 Budget Request actions

4.0 ACRONYMS

ABCN	Authorization Basis Change Notice
ALARA	as low as reasonably allowable
BOF	Balance of Facility
BNI	Bechtel National, Inc.
CA	Construction Authorization
CAA	Construction Authorization Agreement
CAR	Construction Authorization Request
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
HLW	High Level Waste
ISM	Integrated Safety Management
ITS	important-to-safety
LAW	Low Activity Waste
NRC	U.S. Nuclear Regulatory Commission
ORP	Office of River Protection
OSR	WTP Safety Regulation Division
PCAR	Partial Construction Authorization Request
PSAR	Preliminary Safety Analysis Report
PT	Pretreatment
RPP	River Protection Project
SER	Safety Evaluation Report
SRD	Safety Requirements Document
UBC	Uniform Building Code
WTP	Waste Treatment and Immobilization Plant